

Claims

- [c1] 1. A computer-based database processing system, comprising a database, and further comprising:
- (a) one or more user applications;
 - (b) an application interface which communicates data to and from each user application;
 - (c) an entity manager which communicates data to and from the application interface;
 - (d) a constraint manager which communicates data to and from the application interface;
 - (e) an attribute description manager which communicates data to and from the application interface;
 - (f) a component manager which communicates data to and from the entity manager, the constraint manager, the attribute description manager, and the database; and
 - (g) a free space manager which communicates data to and from the component packet manager and the database.
- [c2] 2. A computer-based database processing method, comprising:
- (a) executing one or more user applications;
 - (b) executing an application interface which communi-

- cates data to and from each user application;
- (c) executing an entity manager which communicates data to and from the application interface;
- (d) executing a constraint manager which communicates data to and from the application interface;
- (e) executing an attribute description manager which communicates data to and from the application interface;
- (f) executing a component manager which communicates data to and from the entity manager, the constraint manager, the attribute description manager, and the database; and
- (g) executing a free space manager which communicates data to and from the component packet manager and the database.

- [c3] 3. A computer-based software method for creating and modifying a data base, comprising the steps of:
- (a) creating a multiplicity of component packets, each of which further comprises:
 - (i) a plurality of component data records;
 - (ii) a plurality of component description records arranged in an array; and
 - (iii) a header record, which further comprises a total size field and a number of components field,
 - (b) transferring one or more of the data packets from an

applications program to the database; and
(c) transferring one or more of the data packets from the database to the applications program.

- [c4] 4. The method of claim 3, wherein each component data record further comprises a multiplicity of arbitrary data, and each component description record further comprises a component identifier which is unique within the component packet's component description records, and which further comprises
- (a) a size field
 - (b) a logical block number field; and
 - (c) a component packet offset.

- [c5] 5. The method of claim 4, further comprising:
- (a) adding a new component;
 - (b) modifying an existing component by changing the component data without changing its size;
 - (c) modifying an existing component by increasing or decreasing its size; and
 - (d) deleting an existing component packet.

- [c6] 6. The method of claim 5, wherein a component data record further comprises an entry point of a keyed search structure.

- [c7] 7. The method of claim 5, wherein each component

packet is further associated with a key and is indexed by a keyed search structure.

- [c8] 8. A computer-based system for creating and modifying a data base, comprising :
- (a) means for creating a multiplicity of component packets, each of which further comprises:
 - (i) a plurality of component data records;
 - (ii) a plurality of component description records arranged in an array; and
 - (iii) a header record, which further comprises a total size field and a number of components field,
 - (b) means for transferring one or more of the data packets from an applications program to the database; and
 - (c) means for transferring one or more of the data packets from the database to the applications program.
- [c9] 9. The system of claim 8, wherein each component data record further comprises a multiplicity of arbitrary data, and each component description record further comprises a component identifier which is unique within the component packet's component description records, and which further comprises
- (a) a size field
 - (b) a logical block number field; and
 - (c) a component packet offset.

- [c10] 10. The system of claim 9, further comprising:
- (a) means for adding a new component;
 - (b) means for modifying an existing component by changing the component data without changing its size;
 - (c) means for modifying an existing component by increasing or decreasing its size; and (d) means for deleting an existing component packet.
- [c11] 11. The system of claim 10, wherein a component data record further comprises an entry point of a keyed search structure.
- [c12] 12. The method of claim 11, wherein each component packet is further associated with a key and is indexed by a keyed search structure.